

WHAT IS CLAIMED IS:

1. An image forming apparatus for forming an image by transferring images one after another to a printing medium by a plurality of image forming units disposed
5 along a transport path of the printing medium, the apparatus comprising:

data processing units provided in a number smaller than the number of image forming units, each of said data processing units processing an image
10 signal and generating image data for image formation;

data transfer units, which are provided in correspondence with respective ones of said data processing units, for supplying the image forming units with image data that has been generated by said
15 data processing units; and

control means which, in a case where length of the printing medium along the transport path is less than overall length along which the plurality of image forming units are disposed, is for assigning data
20 processing units commonly to one image forming unit and outputting image data, which has been generated by said data processing units, to the corresponding image forming units via said data transfer units.

25 2. The apparatus according to claim 1, wherein each of the image forming units has an image carrier for forming and carrying an image in accordance with image

data; and

the number of said data processing units and the number of said data transfer units are the same, the number being corresponding to the number of the image carriers that are in contact with the printing medium simultaneously.

3. The apparatus according to claim 1, wherein said data transfer unit has a plurality of FIFO buffers and changeover means for changing over outputs of the plurality of FIFO buffers and supplying the outputs of the plurality of FIFO buffers to the image forming units.

4. The apparatus according to claim 1, wherein the number of said data transfer units is greater than the number of said data processing units and a plurality of said data transfer units are assigned to one image forming unit.

5. The apparatus according to claim 4, further comprising a selector for changing over direction of data transfer between said data processing units and said data transfer units.

6. The apparatus according to claim 1, wherein the plurality of image forming units form images of colors

that are different from one another.

7. The apparatus according to claim 1, wherein in a case where the length of the printing medium along the transport path is less than overall length along which the plurality of image forming units are disposed, said control means assigns a data processing unit, which had been assigned to a first image forming unit that completed image formation with transport of the printing medium, to a second image forming unit that is to form an image next, and outputs image data generated by said data processing unit to the second image forming unit via the assigned data transfer unit.

8. A method of controlling an image forming apparatus having data processing units provided in correspondence with image carriers in a number smaller than the number of image carriers, each of the data processing units processing an image signal and generating image data for image formation; data transfer units, which are provided in correspondence with respective ones of the data processing units, for supplying the image carriers with image data that has been generated by the data processing units; and a plurality of image forming units, which have the image carriers, for forming images on the image carriers in accordance with the image data, an image being formed

by transferring images one after another to a printing medium from the plurality of image carriers disposed along a transport path of the printing medium, said method comprising a step of:

- 5 assigning data processing units commonly to one image forming unit and outputting image data, which has been generated by the data processing units, to the corresponding image forming units via the data transfer units in a case where the length of the
- 10 printing medium along the transport path is less than overall length along which the plurality of image forming units are disposed.

9. The method according to claim 8, wherein the
- 15 number of the data processing units and the number of said data transfer units are the same, the number being corresponding to the number of the image carriers that are in contact with the printing medium simultaneously.

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10. The method according to claim 8, wherein the data transfer unit has a plurality of FIFO buffers and changes over outputs of the FIFO buffers and supplies the outputs of the plurality of FIFO buffers to the
- 25 image forming units.

11. The method according to claim 8, wherein the

number of the data transfer units is greater than the number of the data processing units and a plurality of the data transfer units are assigned to one image forming unit.

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12. The method according to claim 11, further comprising a step of changing over direction of data transfer between the data processing units and the data transfer units.

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13. The method according to claim 8, wherein the plurality of image forming units form images of colors that are different from one another.

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14. The method according to claim 8, further comprising a step of assigning a data processing unit, which had been assigned to a first image forming unit that completed image formation with transport of the printing medium, to a second image forming unit that

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is to form an image next and outputting image data generated by the data processing unit to the second image forming unit via the data transfer unit, in a case where the length of the printing medium along the transport path is less than overall length along which the plurality of image forming units are disposed.

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15. An image forming apparatus for forming an image

by transferring images one after another to a printing medium by a plurality of image forming units disposed along a transport path of the printing medium and corresponding to respective ones of colors,

5 comprising:

data processing units provided in a first number smaller than the number of image forming units, each of said data processing units processing an image signal and generating image data for image formation;

10 data transfer units for supplying the image forming units with image data that has been generated by said data processing units; and

control means for exercising control so as to assign a first data processing unit, which had been
15 assigned to a first image forming unit that completed image formation on the printing medium, to a second image forming unit that is to form an image next, and output image data generated by the first data processing unit to the second image forming unit via
20 said data transfer unit;

wherein the first number corresponds to a number of image forming units capable of printing images on the printing medium concurrently.

25 16. The apparatus according to claim 15, wherein said control means assigns a data transfer unit, which had been assigned to a first image forming unit that

completed image formation on the printing medium, to a second image forming unit that is to form an image next.

5 17. The apparatus according to claim 15, wherein said control means assigns a plurality of data transfer units to one image forming unit.

18. The apparatus according to claim 15, wherein the
10 plurality of data transfer units transfer respective ones of image data of odd-numbered lines and image data of even-numbered lines.

19. A method of controlling of controlling an image
15 forming apparatus for forming an image by transferring images one after another to a printing medium by a plurality of image forming units disposed along a transport path of the printing medium and corresponding to respective ones of colors,

20 said method comprising:

a step of forming an image on the printing medium by a plurality of image forming units capable of printing images on the printing medium concurrently;

a step of assigning a first data processing unit
25 for image data processing, which had been assigned to a first image forming unit that completed image formation on the printing medium, to a second image

forming unit that is to form an image next; and

and output step of outputting image data
generated by the first data processing unit, which has
been assigned to the second image forming unit, to the
5 second image forming unit.

20. The method according to claim 19, wherein said
output step includes assigning a data transfer unit,
which had been assigned to a first image forming unit
10 that completed image formation on the printing medium,
to a second image forming unit that is to form an
image next.

21. The method according to claim 19, wherein said
15 control step includes assigning a plurality of data
transfer units to one image forming unit.

22. The method according to claim 21, wherein the
plurality of data transfer units transfer respective
20 ones of image data of odd-numbered lines and image
data of even-numbered lines.